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Ontario Broiler Industry Research and Services Committee

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EXECUTIVE SUMMARY

This report was prepared based on the discussions held at the annual meeting. At that time, meat quality, food safety, health and diagnostics, condemnations, epidemiology/data analysis, and environmental issues were identified as priority items. These areas are similar to the previous years recommendations but the committee did change the details under each general area to better reflect the current needs and current state of research. There was a recognition of a need for a larger integrated approach that linked production based research with food safety and quality issues; that research efforts be closely tied to the needs of potential end users; and that new technology can be readily adopted when it becomes available.

Industry, government and university must ensure adequate teaching facilities and faculty to promote/maintain the core of expertise in poultry management, health and diagnostics and also ensure adequate diagnostic facilities and expertise to service and protect the health status of the industry. There continues to be a need for a system of co-operation and communication to promote interdisciplinary contacts regarding food safety, consumer health aspects, worker health/safety and environmental sustainability, to develop new markets and marketing strategies, to develop new products promoting health and quality and to enhance food quality

and safety.

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INTRODUCTION

The timing of the Broiler Committee was scheduled to coincide with the meeting of the Turkey Committee on July 15, 1998 at the Poultry Industry Centre, Arkell. The two committees spent some time in joint session to discuss areas of mutual concern and the poultry research projects funded by the Animal program, under the OMAFRA/University of Guelph agreement.

The Poultry research review day was well attended and well presented. There is encouragement to continue that format on a regular basis.

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STATE OF THE INDUSTRY

Ontario broiler production is a multi-level chain comprised of approximately 75 (?) pullet growers and hatching egg producers, 7 hatcheries and 1100 broiler producers. There has been increasing interest from older dairy farmers to switch to the broiler industry. There is a tremendous amount of new construction and renovation with the trend aiming towards larger units particularly in the hatching egg sector.

The new export production policy in effect from A22 will allow additional placements in the second half of 1998. In addition, increasing further processing market is providing optimism for a growing, dynamic industry. The imported hatching egg supply has been unusually tight this year resulting in substantially increased prices from US suppliers which was compounded further by a falling Canadian dollar. This has resulted in flock life extensions in Ontario in an attempt to cover the shortfall.

Gross sales:

Hatching egg producers:	$55 Million to hatcheries
Hatcheries	$90 Million to producers
Feed	$200 Million to producers
Live bird sales	$400 Million to processors

The total value of the Ontario broiler industry would be in excess of $4 billion per year and includes the job value of allied industries, distribution, etc.

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EMERGING ISSUES

In 1998 the industry faced many challenges on different fronts.

The emergence of "J" virus myeloid leukosis in elite and parent

broiler breeder stocks has noticeably affected supply. Eradication programs now in effect have reduced parent stock availability. Also, higher mortality rates in parents due to J virus, particularly in the southern states, have severely impacted on the timing and availability of imported hatching egg supply. The Ontario flock has also felt the effects of higher than normal mortality levels in parent stock and there are questions of production losses and stunting in broiler progeny.

HACCP is a reality for all larger processors and the live sectors (breeders, hatchery and growers) are well on the way to instituting HACCP based programs. However, HACCP in live product is purely an exclusion program. If a flock becomes positive, there is no effective method of treating and eliminating the hazard in live product or of effectively streaming the product through the processing plant. The live segment of the industry is badly in need of new and scientifically proven method of true control of bacterial pathogens of significance to food safety with respect to any point in the live production chain prior to entering the processing plant. The increased demands for higher production levels, less downtime, and higher densities is coupled with increasing demands for "safe" products and reduced bacterial loads on live product entering the plant. These challenges are compounded by the possible loss of additional antibiotics or severe restriction in use due to worries about possible increased antimicrobial resistance levels in potential pathogens.

The needs of the broiler breeder sector in terms of research on specific management techniques, egg production, hatchability, embryology and chick quality hopefully will be met by the expanded commitment at the University of Alberta to this specific field.

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RECOMMENDATIONS

1. Centre Of Excellence For Poultry Research **Priority 1-A**
U of G: Little or no definite action, although funds being sought for a web site.

2. Food Safety and Quality Research, Non traditional R&D **Priority 1-A**

ARIO: HACCP programs are based on individual plant's requirements. Hence this is not necessarily a universal research program.

U of G: Barbut, S.: Improvement of the safety and textural properties of fresh and further processed poultry products.
Gyles, C: A vaccine against E. coli infections in broilers.

2B: Food Safety and Quality, Health and Diagnostics, R & D
Recommendation: (Priority 1B) Service
Recommendation: (Priority 1-B)

ARIO

The approved 1997-2001 poultry research program addresses the recommendation (objectives 2 & 5).

UNIVERSITY OF GUELPH

Nagy, E: Investigations of molecular biology of avian viruses and development of recombinant vaccines and diagnostic procedures.
Barta, J.: Determination of the immune responses of chickens to immunological variants of Eimeria maxima.
Barta, J.: Effect of genetic diversity of parasites on imunity to coccidia.
Fernando, A: The dsRNA virus of Eimeria necatrix of the chicken, effects of pathogenicity and immunogenicity.
Fernando, A.: Analysis of infraspecific variation among Eimeria.

2C: Food Safety and Quality: Welfare issues R & D Recommendation Priority 1-B

ARIO

Objective #3 of the approved poultry research program addresses the recommendation.

UNIVERSITY OF GUELPH

Duncan, I: Poultry welfare: Examining correspondence between behavioural systems and husbandry practices.

3. Environmental Issues, R & D Recommendation **Priority 1-B**

ARIO

Objective #4 of the approved poultry research program addresses therecommendation.

UNIVERSITY OF GUELPH

Leeson, S: Manipulating the growth and development of poultry.
Leeson, S: Dietary control over nutrient composition of poultry.

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1998 RESEARCH PRIORITIES

RECOMMENDATION #1 FOOD SAFETY **PRIORITY 1B**

TO: ARIO, AG CAN, CC FOOD SAFETY, CARC

To improve the quality and safety of chicken meat, thus enhancing consumer confidence and acceptance of chicken and chicken products.

DETAILED OBJECTIVES

1. Risk assessment at each and all levels of the production chain. Determine the impact of enhanced control measures at each point and develop cost benefit analysis for such measures.
2. Reduction of microbial load in the live animal supply to processing. Continue the development of methodology for rapid detection and quantification. Develop new and innovative methods that provide a level of true control (or acceptable treatment/ elimination in infected flocks) for bacteria of significance to food safety.
3. Continue the development of methodology for the detection, control and reduction of drug residues and other possible contaminants in chicken and products. Determine the impact on resistance levels in microbes.
4. Investigate alternative medications and innovative preventative regimes (e.g. competitive exclusion).
5. Develop innovative poultry products through genetic engineering or innovative feeding regimes. This could be in reference to inclusion of "health" additives (e.g.omega 3 fatty acid, vitamin analogues), in reference to improved detection of hazards (e.g. bone fragment detection) or in reference to improved quality/ uniformity/shelf life fresh product.

BACKGROUND

Consumer concerns about food safety appear to be rising based on the frequency of media reports. As poultry has been targetted specifically in the past, the subject of food safety has become the foremost issue of concern in all segments of the poultry industry. It is vital for the future competitiveness of the poultry industry to maintain consumer confidence and meet or exceed consumer expectations with respect to food safety and product quality. The industry must be proactive in developing new and fully integrated approaches with elements of true control to ensure a consistent high level of safety with respect to potential pathogens and contaminants. Product emphasis must be on high quality addressing consumer concerns for food safety, health promotion, nutritional aspects as well as cultural and convenience preferences while developing new specialty, new flavour, niche, value add or shelf stable foodstuffs for a global market.

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RECOMMENDATION #2: FOOD SAFETY **PRIORITY 1B**

TO: ARIO, AAFC, OMAFRA

To conduct research to improve the health of poultry and diagnostic ability for the industry.

DETAILED OBJECTIVES:

1. To research and develop rapid, accurate, efficient and inexpensive methods of diagnosis, subtyping and specific agent subgroup identification dealing with the viral and bacterial diseases of significant economic importance to the industry.
2. To research pathogenesis and techniques for the prevention and control of those diseases of prime economic importance to the poultry industry whether infectious or metabolic in origin; for example (but not limited to) cellulitis, coccidiosis, colibacillosis, ascites, respiratory disease complex, infectious bursal disease and laryngeotrachitis.
3. To investigate alternative methods of improving livability and general health without sacrificing productivity; for example, the role of diet in immune status, prevention of metabolic disease and reduction of mortality.

BACKGROUND

The poultry industry has very few treatment regimes available presently and with current policies and requirements, the introduction of new drugs and chemicals registered for poultry is unlikely. This is coupled with the consumer's fear of residue and increasing demand for "drug free", organic and "natural" meat products. To maintain the health, productivity and livability of the flocks and also maintain the quality and grade at the slaughter facility, the poultry industry must depend on prevention, early diagnosis, husbandry support and containment of diseases whether infectious or metabolic in origin.

At this time the industry is severely disadvantaged in its ability to identify viral subgroups. Timely rapid accurate agent identification is vital as the first step in adjusting or redesigning present prevention/treatment regimes, in responding appropriately and rapidly to emerging problems and in developing new control procedures. The resources and support must be allocated to allow projects such as the development of PCR techniques to reach the stage where they will be able to service the industry.

Continued and increased support of the Poultry section of Animal Health Lab at U of G is needed to research, develop and provide diagnostic services to the poultry industry especially (but not limited) in regards to histopathology, serology, virus isolation, DNA probes and PCR techniques, mycoplasma monitoring and isolation. The industry depends heavily on the services, specialized expertise and the technical and educational extension from the poultry team at AHL.

Infectious and metabolic disease are still a significant economic cost to the industry both in mortality and in condemnations. "New" diseases and disease strains are constantly being discovered in the world and although Canada is reasonably isolated, the possibilities of introduction still exist the most recent example is the "J" virus.

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RECOMMENDATION #3: POULTRY WELFARE **PRIORITY 1B**

TO: ARIO, AAFC, CC WELFARE

To research strategies in poultry management and transportation systems which will reduce condemnation levels while also reducing bacterial contamination and improving poultry welfare.

OBJECTIVES

1. To assess and quantify the impact of management systems, housing design, handling, crating and live haul transportation systems on the quality of poultry meat, the level of condemnation/downgrading/trimming (e.g. DOA, bruising, dermatitis, cellulitis, CRD) and on the shedding and cross contamination of potentially pathogenic organisms.
2. To find new technological innovations and refinements which will reduce these losses and cross contamination and improve cost effectiveness and efficiency while improving animal welfare.

BACKGROUND

There are significant losses to the industry yearly in DOA's, bruising, cyanosis, downgrades and condemnations at the processing plant due in large part to the type, design and method of handling, transportation and to environmental factors associated with housing design and operation. This is more than an economic issue, it is also a quality issue in terms of meat salvage and aesthetics, a food safety issue in terms of stress shedding of pathogenic organisms and reduced shelf life, and a welfare issue in terms of humane practices and adequately meeting live bird needs. The industry is interested in being proactive in addressing welfare concerns especially where it impacts on product quality and requires factual scientific data on the needs of poultry to improve the present systems and also to respond adequately to critics.

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RECOMMENDATION #4: DATA ANALYSIS **PRIORITY 1B**

TO: ARIO, AAFC, CARC, OMAFRA

To establish a central data analysis/information network to allow tracking, epidemiology and fulfillment of export requirements.

OBJECTIVES

1. To arrange the compilation and analysis of data from the field to investigate:
   - the epidemiology of specific disease occurrences,
   - the epidemiology of condemnation trends,
   - the effect of management trends and prevention/health programs on the health and performance of the Ontario flock,
   - the effect of new quality assurance and HACCP programs on contamination rates and overall flock health (and ultimately on consumer health and complaints),
   - the economic and market factors affecting industry structure and global competitiveness.
2. To track certain diseases' occurrence in order to meet specific countries' export requirements for fresh and frozen product.
3. To formalize a network of academic and industry researchers and health professionals for better communication, coordination and information flow. This would allow an integrated approach, a more effective "needs" development, encourage cooperative research projects and industry $ support, and encourage rapid and appropriate application of research findings.

BACKGROUND

The poultry industry has evolved over the years into a very precise and detailed data collection system, recording everything imaginable, primarily on electronic/computerized devices. This system produces a huge amount of data yearly and would be a wealth of information if compiled and analyzed. The designing and development of a centralized collection system with third party independence, appropriate epidemiological expertise and statistical capabilities would leapfrog the industry into the 21st century. It could also provide a central clearinghouse for educational and technical information release and exchange.

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RECOMMENDATION #5: ENVIRONMENTAL ISSUES **PRIORITY 2C**

TO: ARIO, CARC

To focus research on environmental issues, indoor and outdoor, and develop systems which reduce environmental impact as well as improve the performance, health, safety and comfort of poultry, and health and safety of poultry workers.

OBJECTIVES

1. To develop alternative methods of manure storage, pretreatment, application, disposal (value added) and dead animal disposal. To develop improved methods of sampling and testing manure to better determine application rates and the effect on soil and water pollution.
2. To develop technology to reduce any negative impact of poultry production on environment through reducing or balancing nutrient content, reducing odour, and improved feed utilization. Investigate feed formulations as a means to reduce ammonia levels in barns, nitrogen and phosphorus excretion, reduce volume, and to produce a more amenable end product.
3. Assess and quantify the environmental effects and ergonomics of poultry housing, handling and transportation systems on the health and welfare of poultry workers.

BACKGROUND

There is growing concern in areas of Ontario as to the compatibility of high density poultry production and urban encroachment. Alternative methods of manure handling, storage and disposal or possible pretreatment of litter or manure need to be investigated. Feeds need to be formulated on the basis of available amino acids and other essential nutrients as a means of reducing ammonia levels in the barn, nitrogen and phosphorus excretion in the manure and reduced volumes to prevent pollution and produce a product more amenable for crop or garden/lawn fertilizer or as an alternate feed source.

There is also room for investigation of rural sociology to better understand and develop "good neighbour" strategies between commercial poultry production and the growing rural population. More and more poultry producers are becoming employers as well and the needs and safety of their workers must be taken into account. There is need to assess and quantify the effects, risks and efficiencies of the environment and ergonomics of poultry housing, management, handling techniques and transportation systems on the health and welfare of poultry workers.

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ONTARIO BROILER INDUSTRY RESEARCH AND SERVICES COMMITTEE Membership 1998

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